

SUPERFUND FINAL SITE CLOSE OUT REPORT

ASBESTOS DUMP SITE MEYERSVILLE, MORRIS COUNTY, NEW JERSEY



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Prepared by

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I. INTRODUCTION

This Final Close Out Report documents that the U. S. Environmental Protection Agency (EPA) has completed all response actions for the Asbestos Dump Site in accordance with *Close Out Procedures for National Priorities List Sites* (OSWER Directive 9320.2-09A-P, January 2000).

The Asbestos Dump Site (Site) consists of four separate properties which were addressed in three discrete operable units (OUs). OU1 consists of the Millington site, located in Millington, New Jersey. OU2 consists of the New Vernon Road and White Bridge Road "satellite" sites, both of which are located in Meyersville, New Jersey. OU3 consists of the third satellite site, known as the Dietzman Tract, which is located in Harding Township, New Jersey. The Site was placed on the National Priorities List (NPL) in September 1983.

A Remedial Investigation (RI) for the Site was conducted by the National Gypsum Company (NGC), the Potentially Responsible Party (PRP), between 1986 and 1987. The RI sufficiently delineated the nature and extent of contamination for OU1; however, EPA determined that additional investigations were needed to complete the characterization of contamination for OU2 and OU3. Subsequent RI activities for OU2 were conducted by EPA and completed in 1991. OU3 RI activities were conducted by the U.S. Fish and Wildlife Service (FWS) and completed in 1997. Records of Decisions (RODs) for each of the three operable units, OU1, OU2 and OU3, were signed in September 1988, September 1991 and September 1998, respectively. The selected remedy for OU1 included the installation of a soil cover, slope stabilization, monitoring and implementation of institutional controls. The remedy for OU2 consisted of the solidification/stabilization of asbestos-contaminated soils at the New Vernon Road and White Bridge Road sites along with monitoring and implementation of institutional controls. The OU3 remedy consisted of removal and off-site disposal of non-asbestos-containing contaminated materials, consolidation and capping of asbestos-containing materials, and implementation of institutional controls.

Remedial actions for the Site were completed by the year 2000. As a result of these actions, cleanup levels protective of human health and the environment have been achieved for the Site.

Given the nature of this Site, the Final Close Out Report will summarize the history, remedies and remedial actions taken for each individual OU.

II. SUMMARY OF SITE CONDITIONS

Background

Manufacturing of asbestos-containing material (ACM) began at the Millington site in 1927 by Asbestos, Ltd., which engaged in the fiberization and sale of asbestos until 1946. While the property had changed ownership over the years, ACM continued to be produced until 1975 when the plant was closed by NGC, the owner at the time. During the period in which the asbestos manufacturing facility was in operation, asbestos-containing waste had been disposed of on the Millington site. When the Millington site had reached its capacity for on-site disposal,

asbestos-containing waste materials were disposed of off-site at the New Vernon Road, White Bridge Road, and the Dietzman Tract sites.

Background - Operable Unit One

OU1 consists of the Millington site which is an 11-acre commercial property located at 50 Division Avenue in Millington, New Jersey. The site is bounded on the west by the Passaic River, on the north by the Millington Train Station, and on the east and south by commercial and private residences, respectively. Currently owned by Tifa Ltd., this parcel was formerly utilized as an asbestos processing plant that had several previous owners. Manufacturing of asbestos products at the Millington site began in 1927 by Asbestos Ltd., which engaged in the fiberization and sale of asbestos until 1946. From 1946 until 1953, the plant was owned and operated by Smith Asbestos, Inc., a manufacturer of asbestos roofing and siding. During this later period, asbestos sediment from water settling ponds was disposed of on-site.

In May 1953, the property was acquired by NGC, which manufactured cement asbestos siding and roofing sheets at the plant until 1975. During this period, waste products, consisting of broken siding and asbestos fibers were dumped on a five-acre area of the property. This included a 330 by 75-foot area (later referred to as the asbestos mound) where predominantly asbestos fibers were disposed. It is estimated that 90,000 cubic yards of asbestos waste were disposed of on-site.

Background - Operable Unit Two

OU2 includes the New Vernon Road and White Bridge Road sites. The OU2 New Vernon Road site is located at 237 New Vernon Road in Meyersville, Long Hill Township, Morris County, New Jersey. It consists of approximately 30 acres of land and is currently bounded by the Great Swamp National Wildlife Refuge (GSNWR) to the north, tracts of wooded and wetland areas to the east and south, and New Vernon Road to the west. The property previously included two residences and a large garage structure.

From 1945 through 1980, the privately owned New Vernon Road site was used for farming. From 1968 to 1971, ACM generated by NGC, including asbestos fibers, broken asbestos tiles, and siding, was deposited throughout the site. Large amounts of ACM were deposited in the central portion of the property in a large depression. Asbestos had also been detected in other areas of the property.

In 1998, the government acquired the New Vernon Road site from the residential owners. In January 2002, EPA, the New Jersey Department of Environmental Protection (NJDEP) and the FWS reached an agreement on the terms of the transfer of a portion of the New Vernon Road site to the FWS to expand the GSNWR. In September 2002, an approximate 25-acre portion of the New Vernon Road site was formally transferred to the FWS and is now part of the GSNWR. The remaining five-acre portion, which contains the area of solidified asbestos-containing material, was transferred to the State of New Jersey.

The White Bridge Road site is located at 651 White Bridge Road in Long Hill Township, NJ. It is approximately two miles away from the New Vernon Road site and consists of approximately 12 acres of land, as well as adjoining property, which is part of the GSNWR, in Meyersville, New Jersey. The site is bounded by White Bridge Road to the north, the GSNWR to the east and southeast, Black Brook to the southwest, and a wooded lot to the west. One private residence, including a two-story home, garage, two sheds and three stables, is currently located on the site. The property also includes a series of fenced-in grazing fields.

From 1945 through 1969, the White Bridge Road site had been used for farming. In 1970, the property was purchased by the current residents. From 1970 to 1975, ACM, including asbestos tiles and siding from the NGC, was disposed of on the property. Subsequent to these disposal activities, the current owner converted the property into a horse farm with stables, a horse riding track, and grazing fields. The horse riding track was comprised of large amounts of ACM mixed with soils. ACM had also been detected in other areas of the site.

The remedy for the White Bridge Road portion of OU2 was completed and this portion of the site was deleted from the NPL in February 2002.

Background - Operable Unit Three

OU3 consists of the former Dietzman Tract which is a seven-acre parcel of land located in GSNWR, about two miles southeast of the New Vernon Road portion of the site. The GSNWR, currently owned by the FWS, covers approximately 7,400 acres of swamp, wooded, and wetland areas. The refuge is managed by FWS for a wildlife habitat and for recreational purposes. In addition to 185,000 annual visitors, there are approximately 440 residents of the neighboring community within a one-mile radius of OU3. The Dietzman Tract included the following four discrete areas: 1) Site A - a five-acre asbestos-contaminated dump; 2) Site B - a half-acre dump consisting of refuse and covered with ACM; 3) Unimproved Access Road (UAR) - a road surfaced with ACM which leads to Site A and Site B; and 4) three small refuse areas adjoining Site B (Refuse Areas #1, 3 and 6).

The above-mentioned four discrete areas of OU3 were used for the disposal of refuse collected from neighboring communities. Along with refuse, ACM and other industrial wastes from the NGC plant in Millington were trucked to the OU3 site for disposal. The disposal of ACM began in 1959 and ended in 1968 when the FWS acquired the property. Approximately 40,000 cubic yards of ACM and refuse were delineated at OU3.

Remedial Investigation/Feasibility Study (RI/FS)

In April 1985, EPA issued an Administrative Order to NGC to conduct the RI/FS at the four properties comprising the Site. NGC performed RI activities in 1986 and 1987 (hereinafter referred to as the NGC RI). EPA performed oversight of these activities. In May 1987, the RI report was submitted to EPA. Upon review, EPA determined that while the NGC RI had adequately characterized contamination at the Millington site, the RI failed to adequately characterize the nature and extent of contamination at the New Vernon Road, White Bridge

Road and Dietzman Tract sites.

In August 1990, EPA collected and analyzed soil and dust samples at the New Vernon Road and White Bridge Road sites. Contrary to data reported in NGC's RI report, high levels of asbestos were detected. EPA determined that an immediate removal action was necessary to address the imminent threat posed by the sites.

During removal activities in 1990, EPA initiated a RI/FS at the New Vernon Road and White Bridge Road OU2 sites to supplement the NGC RI and fully characterize the nature and extent of asbestos contamination. Field work was completed in the fall of 1990 and the RI and FS reports were completed in June 1991. FWS initiated a RI/FS in 1996 for the OU3 Dietzman Tract to fill the data gaps from the NGC RI. The supplemental RI/FS for OU3 was completed in 1997.

RI/FS - Operable Unit One

RI/FS activities were initiated by NGC in 1986 and completed in 1987. The primary contaminant of concern was asbestos. Soil borings and historical information revealed that the upland portion of site contained broken asbestos tiles and siding, while the asbestos mound was found to contain predominantly asbestos fibers. The upland and asbestos mound portions of the site were covered with varying thicknesses of topsoil; however, exposed areas of asbestos fibers were observed on the slope of the asbestos mound adjacent to the Passaic River. The asbestos mound was heavily vegetated with thick underbrush and deciduous trees. Extensive slope stability analyses indicated that the asbestos mound was relatively stable; however, the slope was unprotected from surface erosion and the potential destabilizing effects of flooding along the Passaic River. Analysis of groundwater samples revealed low concentrations of mercury and asbestos related to disposal activities at the site. Mercury was detected in groundwater at concentrations exceeding drinking water standards in a limited number of samples; however, the limited mercury contamination remained within the footprint of the landfill and did not pose an unacceptable human health risk. As a result, groundwater alternatives were not evaluated. Asbestos was detected at concentrations substantially below the still proposed EPA drinking water standard. The RI and FS reports were completed in September 1988.

RI/FS - Operable Unit Two

EPA initiated a RI/FS in the fall of 1990 to supplement the NGC RI and to fully characterize the extent of asbestos contamination. The RI included a hydrogeological investigation, extensive sampling and subsequent laboratory analysis of subsurface soils, sediments, surface water, groundwater, potable water and air. The data indicated the presence of elevated levels of asbestos in the soil at both the New Vernon Road and White Bridge Road residential properties. With respect to groundwater, sampling results indicated that asbestos was not detected at levels above the analytical detection limit for all groundwater samples analyzed. Asbestos was determined to be present in the air at both OU2 sites as a result of soil contamination. EPA determined that an immediate removal action was necessary to address the imminent threat

posed by the contamination. Removal activities were conducted in the fall of 1990 to temporarily reduce the potential for airborne asbestos fibers and to restrict access. Removal activities included installation of fences, air and soil sample collection, decontamination of the residences, and visual inspection of ACM. RI field work was completed in 1990, and the RI and FS reports were completed in June 1991.

RI/FS - Operable Unit Three

The supplemental RI, known as the Phase II RI, for OU3 was needed to fill data gaps remaining from prior investigations to characterize the nature and extent of contamination at OU3. Another goal of the Phase II RI was to collect geotechnical data for evaluation of remedial alternatives in the FS. RI activities included, but were not limited to, the following: 1) characterization of the organic and inorganic contaminants and asbestos in the site media; 2) sampling of groundwater from 15 monitoring wells; 3) sampling of surface water; and 4) excavation of drums from Site A.

Early Phase II RI field activities commenced in January 1996. Removal actions were conducted in Fall of 1996 and air quality monitoring was completed in December 1996. The Phase II RI report was completed and submitted to EPA in 1997. The report indicated that OU3 was found to contain approximately 36,800 cubic yards of ACM, 3,800 cubic yards of refuse debris, an estimated 207 buried drums at Site A, and areas of metal-impacted soil and ACM. Buried drums located at Site A were removed in September 1997. FWS completed its FS report in 1997 which outlined general response actions that would satisfy the remedial action objectives for OU3 and recommend a remedy. FWS commissioned an independent value engineering study of the FS report which validated its findings, conclusions and recommendations.

Record of Decision (ROD)

The cleanup goal for the Site was to contain the migration of asbestos. For OU1 and OU3, asbestos-containing material was consolidated into the respective landfill areas for each OU and then capped. For OU2, the asbestos-containing material (having greater than 0.5% asbestos, which is the Transmission Electron Microscopy analytical method detection limit) was consolidated into one area, solidified and then capped.

On-site ambient air monitoring was conducted during the RI. For OU1, OU2 and OU3, almost all samples from several rounds of air monitoring had results less than the 0.1 fibers/cc standard. There were a few samples slightly above the 0.01 fibers/cc standard; however, the human health risk assessment concluded that there was no significant human health risk posed by airborne asbestos. Again, to mitigate potential future risks, the remediation goal for the site involved the capping of asbestos-containing material since this material could be a potential source of airborne asbestos.

ROD - Operable Unit One

On September 30, 1988, EPA issued a ROD for OU1. The major components of the selected remedy include the following: 1) installation of a two-foot soil cover on areas of exposed or minimally covered asbestos; 2) installation of a chain-link security fence to restrict access to the asbestos mound; 3) construction of slope protection/stabilization measures along the asbestos mound embankment; 4) construction of surface runoff diversion channels on top of the asbestos mound; 5) operation and maintenance of the remedy; 6) long-term monitoring; 7) institutional controls to restrict on-site groundwater usage and limit development on the asbestos fill areas; and 8) treatability studies of technologies for permanent destruction or immobilization of asbestos.

ROD - Operable Unit Two

On September 27, 1991, EPA issued a ROD documenting the Remedial Actions (RAs) for OU2. The ROD documented the remedial actions for both the New Vernon Road property and the White Bridge Road property. The major components of the selected remedy include the following: 1) in-situ solidification/stabilization of asbestos-contaminated soils; 2) appropriate environmental monitoring to confirm the effectiveness of the remedy; and 3) implementation of institutional controls to restrict future subsurface activities and assure the integrity of the treated waste.

EPA issued an Explanation of Significant Differences (ESD) on October 20, 1993 to modify the remedy specified in the OU2 ROD. TRC and TAMS Consultants, Inc. initiated the Remedial Design (RD) in 1991 under contract with EPA and performed a solidification/stabilization treatability study as part of the RD. Based upon the results of the treatability study, the solidification/stabilization depth was changed prior to the issuance of the Final Design Report in January 1993 to require that the solidified/stabilized mass be constructed above the groundwater table.

ROD - Operable Unit Three

On September 8, 1998, EPA issued a ROD for OU3. The major components of the selected remedy include the following: 1) access improvements; 2) long-term drainage improvements, and short-term erosion control measures; 3) drum removal activities (which were completed in September 1997 as a time-critical, non-emergency removal prior to implementation of the preferred alternative), including post-excavation and waste classification sampling; 4) removal and off-site disposal of soils with lead concentrations greater than 218 milligrams per kilogram (mg/kg) (completed, Spring 1998); 5) consolidation of Site B ACM into Site A (completed, Spring 1998); 6) placement of a biotic cover over Site A; 7) implementation of institutional controls to ensure the continued integrity of the drainage and cover activities; and 8) assessment of wetland impacts and wetlands restoration.

Remedy Implementation

Remedy Implementation - Operable Unit One

OU1 remedial action activities were conducted pursuant to the 1988 ROD. The U.S. Army Corps of Engineers (USACE) provided oversight during all remedial activities. USACE contracted with IT Corporation (IT) to complete the remedial actions in accordance with the contract documents and all applicable state and federal regulations.

Mobilization activities began on June 17, 1999 and included the delivery of general materials, initiation of soil erosion and sediment control measures, and clearing and grubbing activities. The primary remedial construction activities included, but were not limited to, access road construction, retaining wall construction for slope stabilization, and cap construction operations. These construction activities included movement of contaminated soil, intrusion of surface soil, construction of drainage channels, and on-site relocation of ACM.

IT graded and compacted the north, south, and east roadways for improved access to the site. Access road construction activities for the south access road began on July 8, 1999. The retaining wall was installed at the toe of the asbestos mound for stabilization purposes. The wall is on average ten feet in height and 516 feet long. Work activities associated with the installation of the retaining wall began on July 26, 1999 and were completed on May 15, 2000. An access path was installed between the base of the wall and the edge of the Passaic River to allow for access during operations and maintenance activities. Work activities associated with the access path were completed on November 12, 1999.

Surface water runoff controls consisted of the construction of drainage channels and the installation of drains to divert runoff from the asbestos mound. Drainage construction controls were initiated on August 10, 1999 and were completed on December 22, 1999.

Asbestos-contaminated material was relocated from the toe of the asbestos mound to the onsite disposal area. Relocation activities were started on July 13, 1999 and were completed on November 23, 1999. Upon completion of the relocation activities, IT graded the asbestos mound and disposal area in preparation for cap construction activities.

Capping activities, which began on August 16, 1999, included, but were not limited to, closing the asbestos mound, relocating excavated material, grading the ACM to the required elevations, installation of a geotextile and geogrid material, and the placement and grading of a two-foot soil cover. On sloped surfaces, the cap consisted of a four-inch layer of crushed stone, followed by geotextile fabric, geogrid, a second layer of crushed stone, structural fill material, and topsoil. On level surfaces, the cap consists of a layer of controlled fill, geotextile fabric, embedded portion of the geogrid, a second layer of controlled fill, and topsoil. Capping material was compacted in accordance with the specification requirements.

Upon completion of the cap construction activities, IT performed site restoration and project close out activities. Site restoration included final site grading, drainage ditch construction, placement of topsoil, landscaping and planting, a final verification survey, site maintenance and cleanup, and demobilization of all temporary facilities and utilities. Site restoration activities were initiated on April 1, 2000 and were concluded on May 15, 2000. In April 2000, a final

inspection was conducted by EPA, USACE and IT. The purpose of the inspection was to ensure that the work activities were completed in accordance with the project specifications. As part of the final site inspection, EPA and NJDEP determined that the remedy was operational and functional.

In September 2001, EPA approved the Final RA Report as well as the 30-Year Operations and Maintenance (O&M) Plan. NJDEP is currently responsible for operation and maintenance activities. The O&M Plan documents the installation of a six-foot high chain link security fence with surrounds the site on its north, east and south limits. A double swing gate is located on the northeastern corner of the site which provides access to the OU1 site. Furthermore, the O&M Plan specifies that periodic inspections are conducted of all OU1 design components including the retaining wall, perimeter access fence, capped area, and mowing/pruning of the ACM cover and surrounding areas. Monitoring of surface water and sediment sampling of the Passaic River, along with groundwater monitoring performed in accordance with the New Jersey landfill closure requirements and the Sampling and Analysis Plan, are included in the O&M Plan. Currently, groundwater, surface water and sediment sampling is conducted once every five years.

In addition to O&M activities, the OU1 site is protected by institutional controls. A Deed Notice was filed by Tifa Realty, Inc., in the Morris County, New Jersey, Office of the County Clerk, on September 8, 2008 for the OU1 Millington property designated as Block 12301, Lot 1 on the Long Hill Township tax map. The Deed Notice has been filed in Deed Book 21152, Page 508. The Millington property consists of approximately 11 acres, with the restricted area comprising approximately five acres. The landfill, which is located on the five-acre restricted area, is surrounded by a fence, and contains approximately 90,000 cubic yards of asbestos and asbestos-containing materials. The types of restrictions placed on the OU1 Millington property significantly limit any type of intrusion onto the landfill, thereby restricting on-site groundwater usage and limiting development on the asbestos fill areas. Any use of the landfill area must be designed to protect the integrity of the components of the landfill.

Remedy Implementation - Operable Unit One - Treatability Studies for Permanent Destruction or Immobilization of Asbestos

The OU1 ROD required that, after the implementation of the cap, EPA conduct treatability studies to evaluate any innovative treatment technologies that may be effective in permanently remediating asbestos. Upon completion of these studies, EPA would evaluate the applicability of these technologies to the Site and may choose to select such a technology in a future ROD. Since the issuance of the OU1 ROD, EPA has performed treatability studies on two technologies and evaluated a third technology for potential applicability to the OU1 site. The results of these studies/evaluations are presented below.

As part of the OU2 activities, EPA evaluated asbestos remedial technologies. Solidification/stabilization of ACM, in addition to capping, was selected as part of the remedy for OU2 in the September 1991 ROD. The solidification/stabilization process served to further immobilize asbestos in the soils, providing an extra level of protection, should the integrity of the cap be compromised by erosion or other unforeseen circumstances in the future. A

Treatability Study was conducted in the design phase for OU2. The results of the Treatability Study demonstrated that solidification/stabilization of ACM above the water table would be effective at immobilizing the ACM. The solidification/stabilization component of the OU2 remedy was successfully implemented at the White Bridge Road site in December 1997 and at the New Vernon Road site in September 2000. Although the solidification/stabilization technology used as part of the OU2 remedy provides an additional level of protection to the OU2 sites, it does not result in the permanent destruction of asbestos or return the site to unrestricted use. Long-term O&M activities are still required at OU2.

The solidification/stabilization technology would not be appropriate or cost efficient for use at OU1. The OU1 landfill currently has a protective cap constructed over the ACM. Any additional level of protection that the application of the solidification/stabilization technology may afford is not necessary at this industrial site. The institutional controls which have been put in place as well as the established O&M procedures are expected to assure that the integrity of the cap is not compromised and this remedy should remain fully protective of human health and the environment over time.

Another innovative technology, involving a type of vitrification (thermal treatment resulting in an asbestos-free glass), was bench-tested for evaluation of the OU3 remedy prior to the 1997 OU3 Feasibility Study. This technology did not pass the feasibility study screening process. The technical result of the bench test proved to be promising; however, the capital costs, permitting expenses and operating costs were prohibitive.

Thermochemical asbestos conversion (destruction) technologies were developed by the private sector in the 1990's and early 2000's to convert ACM to non-hazardous waste. These technologies are still considered to be relatively new and have yet to be implemented at any Superfund site. For OU1, implementation of the thermochemical treatment would involve the excavation of approximately 90,000 cubic yards of landfill material, which would be a huge undertaking. Furthermore, the excavated material would have to be treated and either returned to the landfill as backfill material or shipped off-site for disposal. The thermochemical treatment technologies are currently being considered for use at an EPA Region 9 site; however, the cost of implementing such a technology may be prohibitive. Based on available treatment rates, the cost for implementing the asbestos destruction technology at OU1 of the Asbestos Dump Site was estimated to be well over \$90 million. Given the substantial cost to implement this asbestos treatment technology and the lack of available data regarding its long-term effectiveness, EPA does not believe that this technology is appropriate to use at the Asbestos Dump Site at this time.

EPA believes that the OU1 remedy, including the cap constructed over the ACM waste, is protective and will remain protective. Deed restrictions are in place to assure that the landfill cap is not disrupted in the future and the State of New Jersey is performing routine O&M to assure the integrity of the cap. Based on review of the above technologies, EPA does not believe that any of the technologies are warranted for the site and does not plan to modify or change the selected remedy.

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Remedy Implementation - Operable Unit Two

On September 27, 1991, the Regional Administrator issued a ROD documenting the RA for OU2, the New Vernon Road and White Bridge Road properties. For clarity, this section will describe the remedial construction activities for the New Vernon Road and White Bridge Road properties separately.

New Vernon Road

Remedial action commenced at the New Vernon Road property in June 1994. The construction was performed in two separate phases, marked by schedule milestones of Substantial Completion and Final Completion. The first phase took place between August 1994 and December 1994 and included the following: 1) excavation and consolidation of ACM; 2) in-situ solidification/stabilization of ACM; 3) impermeable cover and perimeter infiltration trench construction; 4) placement of rip rap along the sides of the cap for slope stability protection; and 5) backfill of excavation areas excluding topsoil and seeding.

Both clean and contaminated excavation was conducted at the New Vernon Road property. An area, known as Area A, was designated as a clean excavation area. The clean soils from Area A were excavated and deposited in a clean stockpile area for subsequent use as backfill material. A number of additional contaminated excavation areas were identified. The asbestos-contaminated soils were excavated from these sites and hauled to Area A and the primary solidification area and spread in 12-inch lifts for subsequent solidification. Backfill materials were obtained from on-site and off-site sources. On-site fill was obtained from Area A. Off-site fill materials were used for backfilling the additional excavation areas.

An area approximately 3.9 acres in size was solidified to a depth of three feet below the preexisting grade. Solidification was performed by mixing ACM with cement grout via an on-site batch mixing plant. The solidification process was considered to be complete when the grout mixture had set, and quality control sample results indicated that the solidified mass conformed to the specified design criteria.

A protective impermeable cap over and a perimeter infiltration trench around the solidified area was constructed. The cap consisted of six inches of stone screenings, a geomembrane liner constructed of 60-mil High Density Polyethylene to prevent infiltration through the solidified mass, a geocomposite drainage layer, a 24-inch layer of common fill, and a vegetative layer consisting of six inches of topsoil and grass. To prevent erosion and maintain slope stability of cover soils, a layer of four-inch stone fill underlain by non-woven filter fabric was placed along the side slopes of the filled area, directly over the perimeter trench. Runoff and infiltration water from the cap area drains through the stone layer into the perimeter trench.

The second phase of remedial action activities began on March 27, 1995 and was intended to include site restoration work such as final grading with topsoil, grass establishment, planting, wetlands restoration, asphalt paving, and demobilization. The second phase was halted when EPA issued a Stop Work Order on March 30, 1995. The Stop Work Order was issued to allow

EPA to investigate the technical and contractual issues related to the placement of backfill material which EPA determined did not meet the contract specifications. EPA subsequently issued a Cure Notice, on April 7, 1995, to CDM Federal Programs Corporation (CDM), an EPA contractor, for failure to meet the contract specification for the use of fill at both the New Vernon Road and White Bridge Road properties.

The Cure Response at the New Vernon Road property included the removal of all unacceptable fill, at no cost to the government. Approximately 30,000 cubic yards of unacceptable backfill material was removed at the New Vernon Road property. In June 1998, the government acquired the New Vernon Road property and the property owners were permanently relocated. The Cure Response cleanup activities at New Vernon Road were initiated in July 1998 and completed by March 1999. The USACE provided oversight of the Cure Response cleanup activities. In September 2000, EPA approved the Remedial Action Report for the New Vernon Road portion of OU2.

In June 2001, an O&M plan for the New Vernon Road site was finalized. The overall objective of the O&M Plan is to provide for periodic inspection, maintenance, and monitoring to evaluate and maintain the effectiveness of the remedy implemented at the site. The landfill cap, perimeter infiltration trench and environmental monitoring, are the key components of the O&M Plan. Environmental monitoring includes the collection and analysis of groundwater and monitoring of wildlife species from the area around the New Vernon Road site.

In January 2002, EPA, NJDEP and the FWS reached an agreement on the terms of the transfer of a portion of the New Vernon Road property to FWS to expand the GSNWR. In September 2002, an approximate 25-acre portion of the New Vernon Road property (Block 225, Lot 30) was formally transferred to FWS and is now in use as part of the Refuge. This Lot also includes the residential structures along New Vernon Road. The remaining five-acre portion of the property (Block 225, Lot 30.03), which contains the solidified ACM, was transferred to the State of New Jersey. NJDEP is conducting the O&M activities on the five-acre parcel of the property.

Subsequent to the division of the New Vernon Road property between NJDEP and FWS, separate Deed Notices were filed for Block 225, Lots 30 and 30.03. The Deed Notice for Block 225, Lot 30 was filed in the Morris County, New Jersey, Office of the County Clerk on August 20, 2002. The Deed Notice includes a "Limited Subsurface Use Area" which exists within 10 feet of the foundation of the residences. This area is restricted because it could not be fully investigated for the presence of asbestos because such investigation would have compromised the integrity of the substructure. Digging and excavating more than 12 inches below the surface of the Limited Subsurface Area is prohibited unless approved by EPA or NJDEP. The Deed Notice for Block 225-Lot 30.03, which pertains to the five-acre capped OU2 parcel, was filed in the Morris County, New Jersey, Office of the County Clerk on October 22, 2002. The Deed Notice specifies the restrictions placed on the capped area of OU2. The Deed Notice does not permit any disturbance of the surface or subsurface of the capped area including, but not limited to filling, drilling, excavation, or the removal of topsoil, sediments, rock or minerals, or by

construction, planting anything other than grass or wildflowers, or changing the topography in any manner; however, topsoil may be added to make repairs in accordance with the Deed Notice. Changing, damaging or removing the perimeter trench around the solidified mass, the manholes or the monitoring wells is also prohibited.

White Bridge Road

Remedial construction activities for the White Bridge Road property were initiated in June 1994. The first phase of activities included excavation, solidification, backfilling and construction of the impermeable cover. Field work occurred between August 1994 and December 1994. ACM was excavated and consolidated into one central area of the White Bridge Road property. A higher volume of ACM was excavated than initially anticipated; therefore, a settlement analysis of the solidified mass was performed. Analytical results indicated that additional settlement of up to nine inches could occur, which would place the solidified mass in contact with the groundwater. As a result, the initial design solidification depth was reduced to ensure that the solidified mass did not come in contact with the water table. This change in design was documented in an ESD, dated October 20, 1993. Approximately 2.5 acres of land were solidified at the White Bridge Road site. The final depth of the solidified ACM was approximately 2.5 feet below the ground surface.

An impermeable cover was constructed over the solidified mass. The cover consisted of six inches of stone screenings, an impermeable high density polyethylene liner, a geonet drainage layer, 24 inches of common fill, and six inches of topsoil which was subsequently seeded. A perimeter trench was also installed in conjunction with the impermeable liner. The trench was three feet deep and five feet wide located on three sides of the landfill approximately three feet from the edge of the solidified mass. A minimum of a nine-inch layer of course aggregate was placed at the bottom of the trench followed by perforated and corrugated flexible pipe lain on the stone bed. At original grade, the geotextile fabric was wrapped across the top of the trench and overlapped. Furthermore, the trench was finished with a sloped layer of four-inch stone. A drainage layer, consisting of geosynthetic materials was placed over the geomembrane and common fill was placed over the drainage layer. The final layer consisted of topsoil which was seeded to stabilize the soil and establish grass cover.

The second phase of remedial construction activities included site restoration. Site restoration included topsoil placement, fence construction, monitoring well installation, stockpile removal, seeding and landscape replacement. This phase was conducted between March and November 1995.

After implementation of the first phase of the remedy, EPA discovered that some of the fill material, which was used by the contractor on the White Bridge Road property, had originated from a facility subject to the New Jersey Cleanup Responsibility Act, now the Industrial Site Recovery Act. On April 7, 1995, EPA issued a Cure Notice to CDM, indicating that this material failed to meet the contract specifications for fill. This was the same Cure Notice that was issued for the New Vernon Road property, as described in the previous section.

Approximately 1,010 cubic yards of this unacceptable fill material, which had been used in three areas on the White Bridge Road property, had to be addressed. The work performed under the Cure Notice Response Workplan was completed on August 28, 1995 and was performed at no cost to EPA or the State.

Remedial construction activities for the White Bridge Road site were completed in October 1995. The Final Remedial Action Report, prepared by CDM, was approved by EPA in December 1997. In April 2000, EPA conducted activities at White Bridge Road to re-establish the vegetative cover and install a trench drain on the surface of the cap. An O&M Plan was written for the White Bridge Road site in July 2001. The O&M Plan includes the maintenance and monitoring of site features including the landfill cap, perimeter infiltration trench, and environmental monitoring. O&M obligations are shared between both the property owners and NJDEP. Property owners are largely responsible for mowing and maintaining the capped area along with maintaining other site features while NJDEP is primarily responsible for the environmental monitoring activities. Details of the O&M obligations are outlined in the January 2001 Deed Notice.

On January 5, 2001, the owners of the OU2 White Bridge Road property filed a Deed Notice with the Morris County Clerk. EPA and the State of New Jersey agreed on the terms of the Deed Notice. The Deed Notice has the same general restrictions as those included in the New Vernon Road Deed Notice whereby any disturbance of the surface or subsurface cap is strictly prohibited. In addition, the White Bridge Road Deed Notice specifically prohibits the following: horseback riding; any type of pasturing what would result in a permanent pattern on the solidification area or that will cause damage to the vegetative cover; any activity that might compromise the integrity of the solidified mass or its cap; and moving the fence posts installed on the top of the solidified mass area.

In February 2002, EPA deleted the White Bridge Road portion of the site from the NPL.

Remedy Implementation - Operable Unit Three

On September 8, 1998, the Regional Administrator signed a ROD for OU3. The United States Department of the Interior (DOI), acting through the FWS, was the lead agency for the remediation of OU3, and EPA was the oversight agency. The USACE was contracted by the FWS to design the remedies and perform construction activities. Construction activities were subcontracted by the USACE to the IT Corporation. The FWS established a three-phase approach for remediating the OU3 areas described in the previous OU3 background section.

Phase 1 addressed the activities conducted as an emergency response action to install drainage improvements at the OU3 site and remove buried drums from Site A. Access to Site A was improved by upgrading the surface of the UAR and clearing dense vegetation covering Site A. The site drainage was enhanced by clearing the channel constriction and blockage where the UAR crosses the Old Great Brook Channel northwest of Site A, which was also the location of a beaver dam. A culvert system was placed in the channel to maintain vehicle access to Site B and improve site drainage. FWS also conducted interim drainage improvements in July 1997 by

constructing a bypass channel to divert Old Great Brook surface water flow away from Site A. After drainage improvements were completed, drum excavation and removal, and off-site disposal of the drums and miscellaneous debris were initiated and completed in October 1997. The non-emergency, time-critical removal action included the excavation of 207 buried drums and was undertaken to eliminate any threat of future leaching of drum contents to groundwater. Post-excavation soil samples were collected and the analytical results confirmed that contaminants in the drums had not been released to the soil and, therefore, were not released to groundwater above the regulatory standards before or during removal. Phase 1 work was completed in 1997.

The Phase 2 removal action included the excavation, removal, and off-site disposal of lead-contaminated soils located at Site B, Refuse Area #1, and Refuse Area #6 (as defined in the OU3 background section). The action was initiated in February 1998 and was completed in May 1998. Removal activities also included the consolidation of ACM from Site B onto Site A. The total volume of lead-impacted soils and debris removed and disposed off-site from Site B was approximately 3,460 cubic yards. The total volume of ACM moved from Site B to Site A under the consolidation activities was approximately 740 cubic yards.

Phase 3, the final remedial action phase, included the excavation and removal of ACM from the UAR, consolidation of the excavated UAR material to Site A, backfilling the excavated portions of the UAR, and construction of the biotic cap on Site A.

Cap construction activities included the installation of an anchor trench on the west side of the landfill, compaction of landfill material, placement of geotextile fabric (woven and non-woven) and placement of geonet for the biotic barrier. The fabric was placed over the top of the landfill surface, with panels or sections of the fabric and geonet overlapping at a minimum of six inches. Soil material from an on-site stockpile was placed over the goetextile/geonet cap. Construction of the biotic cap on the Site A landfill was considered to be complete after a final inspection was conducted in September 1999.

The disturbed and created wetlands areas were restored by placing a final soil cover, consisting of six inches of organic sediment, over the areas. The sediment contained a natural seed bank with species indigenous to adjacent wetlands. The progress of wetlands restoration efforts continues to be monitored.

The O&M Plan for OU3 includes maintenance of the permanent features such as the surface water drainage improvements and the Site A biotic cap. The O&M plan also requires the implementation of a groundwater monitoring program that meets the requirements of the New Jersey Pollutant Discharge Elimination System regulations. FWS is responsible for implementing the OU3 O&M plan.

In addition to O&M activities, FWS has implemented institutional controls at OU3 to ensure the continued integrity of the capped areas. OU3 institutional controls include the following: 1) restricted access via a gated road; 2) posted signs indicating closed areas; 3) law enforcement presence; 4) altered trail system to divert people from the landfill area; and 5) periodic inspections. The OU3 property is located entirely within the Great Swamp National Wildlife

Refuge). As part of the National Wilderness Area, the remediated OU3 area is protected from development or future land uses that might potentially conflict with the remedial design. Any changes to this designation would be subject to Congressional approval. As such, the land will be managed in perpetuity as wildlife habitat with very limited public use and access insofar as these activities are consistent and compatible with the O&M actions that have been prescribed for the site.

On September 29, 1999, EPA approved the Final Remedial Action Report for OU3, which signified the completion of OU3 remedial activities.

Community Relations

Community Relations - Operable Unit One

The draft RI and FS reports along with the Proposed Remedial Action Plan (PRAP), which identified EPA's preferred remedial alternative, were released to the public on August 19, 1988. All three documents were placed in the public repository at the Passaic Township Hall. A public comment period was held from August 19, 1988 through September 9, 1988. A public meeting was held on August 29, 1988 at the Passaic Township Hall to present the RI/FS and EPA's proposed remedy and to solicit public input. The issues raised during the comment period were addressed in the Responsiveness Summary Section of the ROD.

Throughout the remedial process, several public meetings had been held in an effort to keep the public informed of site cleanup activities. For example, a public meeting was held on April 15, 1999 at Town Hall in Long Hill Township to discuss details of EPA's construction plans for the OU1 portion of the Asbestos Dump Superfund Site. Another meeting was held with town officials on May 5, 1999 to discuss the remedy implementation for OU1. Communication between EPA, town officials and the public also occurred regularly prior to and during the construction period.

For the 2005 OU1 Five-Year Review, EPA notified the community of the initiation of the Five-Year Review process by publishing a notice in the *Courier News* on September 17, 2005. The notice indicated that EPA would be conducting a five-year review of the remedies at the Asbestos Dump Site to ensure the remedies remain protective of public health and are functioning as designed. In addition, the notice indicated that once the five-year review process was completed, the results would be made available to the public at the Long Hill Township Free Library.

Community Relations - Operable Unit Two

On July 8, 1991, EPA issued a notice in two local newspapers, which contained information relevant to the public comment period for the site, the date of the public meeting and availability of the administrative record. The public comment period began on July 8, 1991 and ended on August 7, 1991. The public meeting was held on July 17, 1991 at the Passaic Township Free Public Library located in Sterling, NJ. The Proposed Plan was presented at the meeting and the

public was given an opportunity to raise questions and concerns about the site to EPA. In addition, written comments were accepted during the public comment period. Responses to the comments received during the public comment period were incorporated into the Responsiveness Summary, included in the ROD. In addition, there was frequent communication between EPA and its representatives and the residents of the White Bridge Road and New Vernon Road sites prior to and throughout construction activities.

The latest five-year review for OU2 was conducted in 2005, in conjunction with the OU1 five-year review. Accordingly, community notification of the intent and scope of the review was included in the OU1 notification as described in the section above.

Community Relations - Operable Unit Three

Once finalized, the RI report, FS report and Value Engineering Report for OU3 were released to the public. The Proposed Plan was issued for public comment on December 12, 1997. These documents were made available to the public in the FWS administrative record file at the Refuge Liaison's office and the information repositories at the Long Hill Township Free Public Library, located in Sterling, New Jersey and the Harding Township Kirby Municipal Building, Town Clerk's Office located in Vernon, New Jersey. The notice of availability for the above-referenced documents was published in the Echoes-Sentinel and Newark Star-Ledger on December 10, 1997 and in the Chatham Courier, Daily Record and Observer-Tribune on December 11, 1997. The public comment period on these documents was held from December 12, 1997 to January 16, 1998 and extended upon request to February 27, 1998.

For OU3, frequent informal meetings had been the preferred method of information distribution requested by the public during early community relations scoping interviews. Consequently, FWS hosted three Community Information Open House forums to which all interested citizens and representatives of village and county agencies were invited. Attendees participated in informal discussions, presentations, and question and answer sessions. In addition, nine fact sheets had been distributed to a mailing list of over 150 interested parties. Periodic briefings were also held for several elected officials and a FWS liaison position and telephone hotline was staffed to facilitate information transfers.

On December 17, 1997, FWS conducted a public meeting to inform local officials and interested citizens about the Superfund process, to present the proposed remedy, review past removal activities at the OU3 site, and to respond to any questions regarding OU3 from area residents and other attendees.

In February 1998, a Technical Assistance Grant was awarded by EPA to a stakeholder group. The Great Swamp Watershed Association used the grant to assist its participation in reviewing response actions for all operable units of the Asbestos Dump Superfund Site, including OU3.

Responses to comments received at the public meeting and in writing during the public comment period were included in the Responsiveness Summary, which was included in the OU3 ROD.

Notification of the 2005 Five-Year Review was published in the *New Jersey Star-Ledger*, including all County editions, on August 1, 2005 and in the Morris County *Daily Record* on July 29-31, 2005. Following the completion of the review, the results of the Five-Year Review were placed in the public repository, located at the GSNWR headquarters.

III. DEMONSTRATION OF CLEANUP ACTIVITY QUALITY ASSURANCE AND QUALITY CONTROL

For OU1 and OU3, the RA activities were conducted by IT Corporation, under contract with USACE. EPA and the State reviewed the remedial construction activities for compliance with quality assurance and quality control (QA/QC) protocols. Construction activities at OU1 and OU3 of the Site were determined to be consistent with the RODs, RD plans and specifications, and RD/RA statements of work issued to the contractors. Furthermore, the Quality Control (QC) program for both operable units included inspections and documentation of site activities to ensure compliance with the remedial action contracts. The QC program also established the measures for management and control of items or activities affecting quality and to verify and document compliance to the specified requirements as outlined in the contract specification. The measures included, but were not limited to, the following: 1) design control; 2) project planning; 3) documents/records control; 4) corrective actions; 5) chemical/analytical testing; 6) subcontractor controls; 7) inspections/audits; 8) investigations and studies; and 9) use of standard OA/OC forms. Quality Assurance Project Plans (OAPPs) had also been developed according to EPA requirements. The QAPPs incorporated EPA and State QA/QC procedures and protocols. EPA analytical methods were used for confirmation and monitoring samples during RA activities.

For OU2, the RA activities were conducted by CDM, under contract with EPA. CDM performed oversight of all field work performed by its subcontractor, Geo-Con. Inspections and tests were performed to ensure that all work was in strict compliance with the contract documents and the Quality Control Plan (QCP). Geo-Con provided a complete inspection and testing program that established inspection and testing procedures followed from the beginning through final completion of each OU2 RA work item. During the execution of the remedial action at the OU2 sites, CDM performed oversight of QA/QC verification sampling conducted by the subcontractor. Three types of samples were collected: asbestos area confirmatory sampling, solidification/stabilization area confirmatory sampling, and clean excavation area confirmatory sampling.

In March 1995, EPA issued a Stop Work Order to CDM to address technical and contractual issues related to the backfill material associated with OU2. A Cure Notice was subsequently issued by EPA on April 7, 1995 to CDM for failure to meet the contract specification for the use of fill at both the New Vernon Road and White Bridge Road properties. Corrective action work, regarding the backfill material, was completed in August 1995 for the White Bridge Road Property and March 1999 for the New Vernon Road property. EPA approved the RA reports for the White Bridge Road and New Vernon Road properties in 1997 and 2000, respectively.

IV. MONITORING RESULTS

Ongoing OU1 and OU2 monitoring activities primarily include the inspection of the landfill covers, inspection of installed drainage features, inspection of the retaining wall (for OU1 only) and groundwater monitoring. Periodic inspections for OU1 and OU2 are conducted by NJDEP. As per the 2005 Five-Year Review Report for OU1 and OU2, inspection findings indicated that the landfill covers and drainage/detention basins were in good condition. Furthermore, there were no signs of damage to the locks, casings or caps of the groundwater monitoring wells. In April 2005, groundwater samples were collected by NJDEP from seven monitoring wells located at OU1 and six monitoring wells located at OU2. Groundwater was analyzed for asbestos. Monitoring results indicated that asbestos was not detected in any of the sampled wells. Five surface water samples were also taken from the Passaic River for OU1 and asbestos was not detected in any of the samples. The next sampling event for OU1 and OU2 will be conducted in 2010.

For OU3, FWS conducts monitoring activities which include, but are not limited to, inspection of the landfill cap, inspection of drainage improvements, and groundwater monitoring. In addition, there is an environmental monitoring component which includes an analysis of surface water, groundwater, sediment and biota samples from the area around Site A. Environmental monitoring parameters, which are analyzed for each media, include target compound list (TCL) volatile organic compounds, TCL semivolatile organic compounds, TCL pesticides, polychlorinated biphenyls (PCBs), herbicides, target analyte list (TAL) metals, and asbestos. Based on data reviewed in the 2005 Five-Year Report for OU3, no substantive detection of environmental contaminants (TCL pesticides/PCBs, herbicides, TCL volatile organic compounds, and TCL semivolatile organic compounds) had been noted in sediment, surface water, or groundwater. Data from October 1999 through December 2004 indicated that a number of TAL metals and asbestos had been detected; however, exceedences of screening values had become less common for each of the TAL metals over the five-year monitoring period. Furthermore, there have been no detections of asbestos in any media at OU3 since December 2002. Results of the 2005 Five-Year Review inspection further indicated that there were no substantive issues with regard to the structure or function of the landfill. The next sampling event for OU3 will be conducted in 2010.

V. SUMMARY OF TOTAL REMEDIAL CONSTRUCTION COSTS

The final remedial action construction costs for OU1, OU2 and OU3 were as follows: 1) OU1 costs were approximately \$3,500,000; 2) OU2 costs for New Vernon Road were approximately \$3,097,744 while the estimated cost for White Bridge Road, based on the remedial design, was \$2,428,415; and 3) OU3 costs, as funded by the FWS, were approximately \$3,135,000. The total site costs for all operable units, incurred by EPA to date, are approximately \$28,419,734. Additional costs were incurred for the site and paid for by the National Gypsum Company prior to its bankruptcy. FWS also spent additional funds on the remedial investigation and feasibility studies for OU3.

VI. PROTECTIVENESS

This Site meets all the site completion requirements as specified in OSWER Directive 9320.2-09-A-P, Close Out Procedures for National Priorities List Sites. The implemented remedies for OU1, OU2 and OU3 of the Asbestos Dump Superfund Site currently protect human health and the environment because the remedial actions have eliminated exposure pathways that could result in unacceptable risks. Furthermore, unacceptable risks are not anticipated as long as the engineered, access and institutional controls are properly monitored and maintained and the site uses remain consistent with the remedies. These controls will ensure the protectiveness of human health and the environment.

VII. FIVE-YEAR REVIEW

Subsequent to the completion of the remedial actions as described in previous sections, hazardous substances, primarily asbestos-containing materials, remain at all three operable units of the Asbestos Dump Site above levels that allow for unlimited use and unrestricted exposure. Pursuant to CERCLA section 121(c), EPA will continue to conduct statutory Five-Year Reviews to ensure that the implemented remedies remain protective of human health and the environment.

The 2005 Five-Year Review report for OU1 and OU2 concluded that the remedies are functioning as intended in the respective RODs. The OU1/OU2 report indicated that aside from continued compliance with institutional controls and monitoring of engineering controls, there are no issues or recommendations for follow-up activities for OU1 and OU2. Due to the presence of asbestos-containing materials present in the landfill areas of the site properties, periodic sampling will continue to be conducted in accordance with the respective O&M plans. The implemented remedies for OU1 and OU2 of the Asbestos Dump Superfund Site are currently protective of human health and the environment because there are no exposure pathways that could result in unacceptable risks and none expected as long as the engineered, access, and institutional controls are properly monitored and maintained, and the site uses remain consistent with the remedy.

The 2005 Five-Year Review report for OU3 concluded that the remedy is functioning as intended by the ROD. During the last five years of O&M implementation, there has been ample documentation that the landfill is successfully meeting its intended protective purpose. The remedy has also been successful in its habitat restoration and wildlife goals. Numerous species are now found using the restored habitat on and around the OU3 landfill. No substantive issues with the structure or function of the landfill have been identified. No substantive detections of environmental contaminants have been noted in the sediment, surface water, or groundwater, and it is recommended that monitoring for these parameters be continued. The remedy is functioning as intended and remains protective of human health and the environment.

The next Five-Year Review for the Asbestos Dump Superfund Site will be conducted in 2010.

Approved By:

Walter E. Mugdan, Director Emergency and Remedial Response Division EPA – Region 2

Nov. 10, 2009

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